

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In The Matter Of)
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)

Biennial Regulatory Review- Amendment)
of Parts 1, 22, 24, 27, and 90 to Streamline and)
Harmonize Various Rules Affecting)
Wireless Radio Services)
_____)

WT Docket No. 03-264

To: The Commission

REPLY COMMENTS OF QUALCOMM INCORPORATED

QUALCOMM Incorporated (“QUALCOMM”) hereby submits its Reply Comments in the above-captioned proceeding, which concerns the Further Notice of Proposed Rule Making (“FNPRM”), FCC 05-144, released August 9, 2005, to support addition of a power spectral density aspect to the PCS base station power limit as CTIA has proposed and to support CTIA’s proposal that the limit regulate average, not peak, power.

**I. The Commission Should Add a Power Spectral Density
Aspect to the PCS Base Station Power Limit**

Several commenters all agree that the Commission should add a power spectral density aspect to the PCS base station power limit, as CTIA has proposed and as QUALCOMM favored in its initial Comments in response to the FNPRM. CTIA argued that “(a)s currently worded, the EIRP rules result in more stringent limits on wideband technologies than the aggregate radiated power produced by narrowband systems operating in the same amount of bandwidth.” CTIA Comments at Page. i. In the same vein, Motorola noted that “the current rules are biased against wider bandwidth technologies as they allow technologies that utilize a narrower bandwidth to radiate a higher power per unit of bandwidth.” Motorola Comments at Page 2. Ericsson’s

Comments state that a power spectral density measurement would appear appropriate for both narrowband and wideband systems.” Ericsson Comments at Page 12. Finally, Powerwave’s Comments state that it believes that “PSD limits are technologically neutral and preserve the flexibility of licensees to choose among the various modulation schemes that are currently available or may be developed in the future for delivery of wideband systems.” Powerwave Comments at Page 2.

Thus, there is a consensus within the wireless industry that the Commission should add a power spectral density aspect to the PCS base station power limits as CTIA has proposed. There is no good reason that the Commission’s base station power rules should disfavor wider bandwidth technologies, such as CDMA2000 and WCDMA, particularly because those are the technologies that are used in wireless systems for 3G and beyond to provide advanced, high speed wireless data services.

The Commission asked in the FNPRM whether it should extend CTIA’s proposals for relief to other bands. FNPRM at para. 54. With respect to the Lower 700 MHz band, in which QUALCOMM holds licenses, it is unclear precisely which proposals the Commission has in mind. If the Commission is going to provide an across-the-board increase of the power limits for the bands used to provide wireless services, the Commission should not leave out the Lower 700 MHz band, in which a variety of wireless services will be deployed. However, the band does have unique characteristics because of the presence of TV stations in some markets until the DTV transition ends. Any such proposal, as well as any proposal to apply the precise CTIA proposals to the Lower 700 MHz band during the DTV transition, would require careful scrutiny because of the presence of the TV stations as well as the need for Lower 700 MHz licensees to coordinate their operations to avoid interfering with one another.

II. The Commission's PCS Base Station Power Limit Should Regulate Average, Not Peak, Power and Should Not Include Any Regulation of the Peak to Average Ratio

These same commenters all agreed with CTIA's proposal that the Commission's PCS base station power limit should regulate average, not peak, power, and should not include any limit on the peak to average ratio ("PAR"), as QUALCOMM argued in its Comments. CTIA argued that "(u)sing peak measurements for non-constant envelope technologies like CDMA and WCDMA does not provide an accurate picture of power in the band. In fact, such a measurement only captures and represents the power peaks with duration of sub-micro seconds that occur with low probability in the band and thus artificially assigns a much higher power in the band than levels observed during operation." CTIA Comments at Page 10. CTIA went on to say that imposition of a limit on the PAR "would be confusing, would tend to restrict wideband technologies and would not serve any sound regulatory purpose." *Id.* According to CTIA, market forces already operate to minimize the PAR, and non-constant envelope technologies with a PAR above zero already exist and co-exist with nearby operations, so that "it is not necessary to adopt a PAR limit in order to guard against interference." *Id.*

Similarly, Motorola "strongly supports the proposal to specify the EIRP radiated limits by considering average output power as opposed to peak values." Motorola Comments at Page 4. Motorola warns that using a peak value without a statistical probability yields results that are difficult to repeat due to measurement uncertainty, and instead using an average value for non-constant envelope technologies "avoids the possibility that impulse-like surges of extremely short durations will unnecessarily govern the operating power of such stations." *Id.* Finally, Motorola states that the average output power approach is consistent with most standards

specifications, which are used to determine interoperability between technologies to ensure co-existence. Id.

Ericsson also agrees that the Commission's base station power limit should regulate average, not peak, power. Ericsson argues that by regulating average power, "the Commission will ensure that the radiated power limits specified in its administrative rules are technology neutral, consistent with prior official direction and industry standards, as well as harmonized with its measurement method for OOB." Ericsson Comments at Page 15. Ericsson notes that WCDMA and CDMA2000 produce emissions where the modulation envelope is not of constant amplitude, and in these cases, an average measurement "provides more accurate and relevant information on output and a more accurate picture of power in the band," and, a peak measurement "artificially assigns a much higher power measurement in the band than levels typically observed during operation for these technologies." Id. at Page 16. As for the possibility of regulation of PAR, Ericsson argues that manufacturers and operators "already use a number of techniques to minimize PAR," so that market forces provide sufficient incentives to decrease base station PAR. Id.

QUALCOMM agrees with these comments, and for all of the reasons expressed therein, QUALCOMM believes that the Commission's PCS base station power limit should regulate average, not peak, power, and should not regulate the PAR.

III. Conclusion

Wherefore, for the foregoing reasons, QUALCOMM respectfully requests that the Commission revise Section 24.232 (a) as CTIA has proposed to add a spectral density aspect to the limit on average base station power, and the Commission should not adopt a limit on the peak to average ratio of a base station's transmissions.

Respectfully submitted,

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